

PHYSOSTEGIA GODFREYI (LAMIACEAE),
A NEW SPECIES FROM NORTHERN FLORIDA

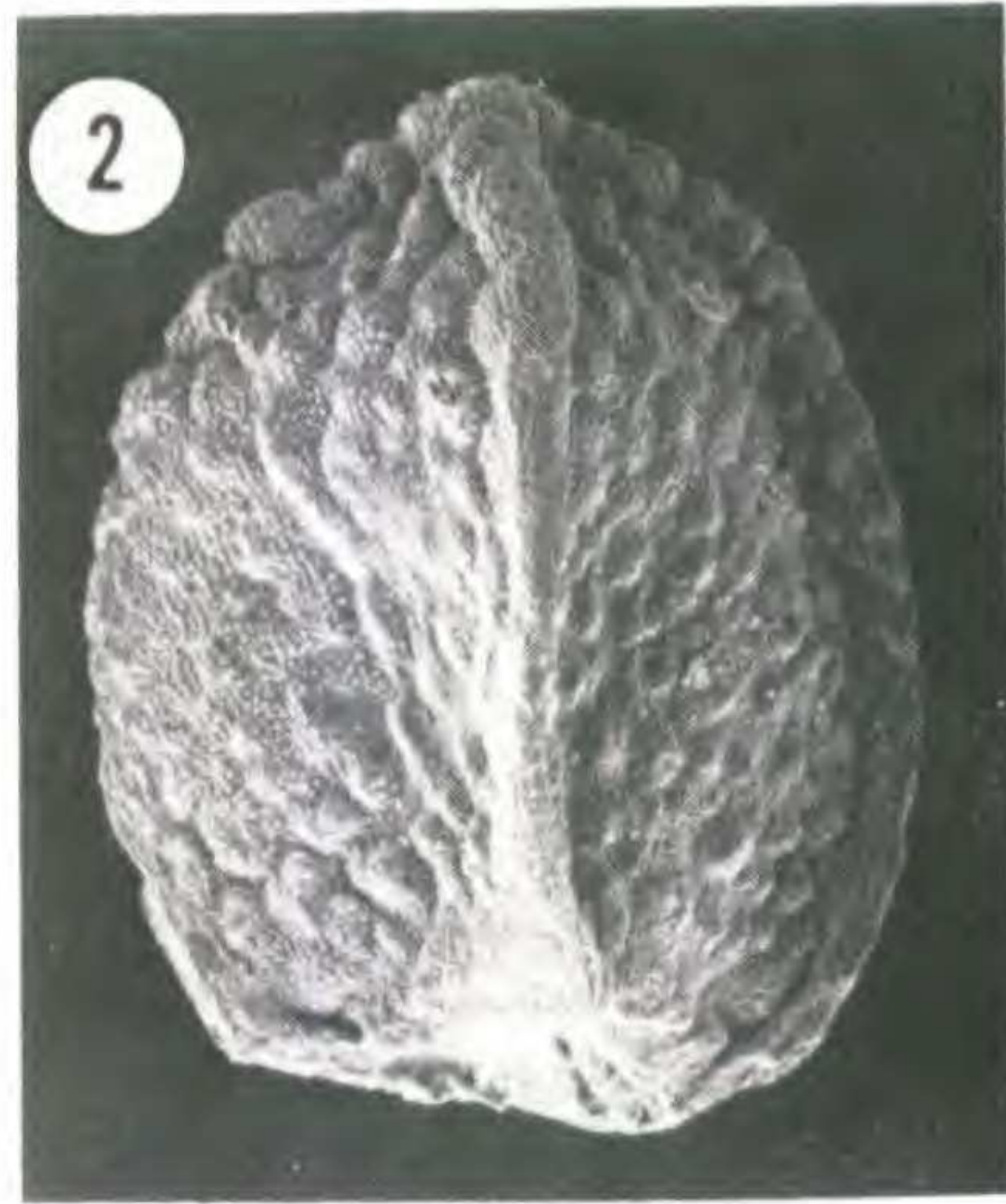
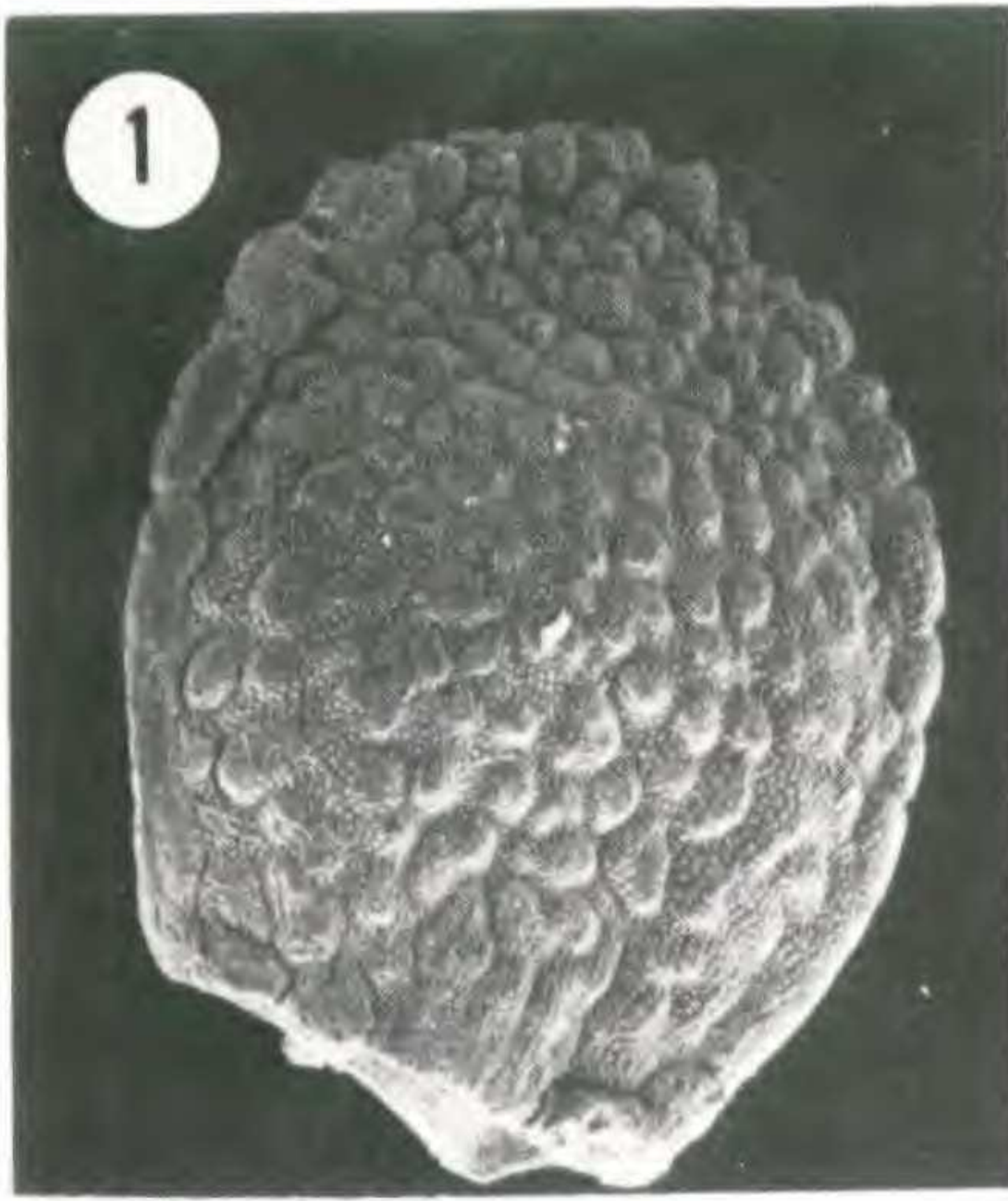
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The populations of *Physostegia* that occur in moist pine savannas west of the Ochlockonee River in the Florida "Panhandle" resemble most closely *P. purpurea* (Walt.) Blake, having in common with that species linear to oblanceolate leaves and entire to bluntly serrate leaf margins, a combination of characters unique within the genus, as well as sharing other similarities in the rhizome, inflorescence, and overall habit. In addition these populations and *P. purpurea* occur in similar habitats but are allopatric or possibly narrowly sympatric. However the plants from west of the Ochlockonee River possess several characteristics that easily distinguish them from *P. purpurea*, including one that occurs nowhere else in the genus.

In the course of a systematic study of the genus as a whole, to be published at a later date, I have found that the species of *Physostegia* are distinguishable on the basis of combinations of characters very few of which are unique to any particular species. The possession of a unique character by the Panhandle plants, in addition to several other characters that are not unique within the genus but which distinguish them from their most similar relatives, warrants their recognition at the species level. Indeed, when *Physostegia* is viewed as a whole, this new species is among the most distinctive in the genus.

I am naming the new species *Physostegia godfreyi* in honor of Dr. Robert K. Godfrey of Florida State University, whose extensive field work has been instrumental in furthering our botanical knowledge of the region where this species is endemic. The type collection of the species is his, as are many of the other existing specimens.

The nutlets of *Physostegia godfreyi*, in addition to being the smallest in the genus (1.7–2.0 mm long), are usually warty over part or all of their surface (Figures 1–4). All other species have smooth nutlets (Figure 5). Secondly, *P. godfreyi* possesses minute stalked glands on the calyx and rachis of the inflorescence (Figures 6 & 7), a character that is found elsewhere in the genus but not in *P. purpurea*, the only species with which it could be confused. Thirdly,

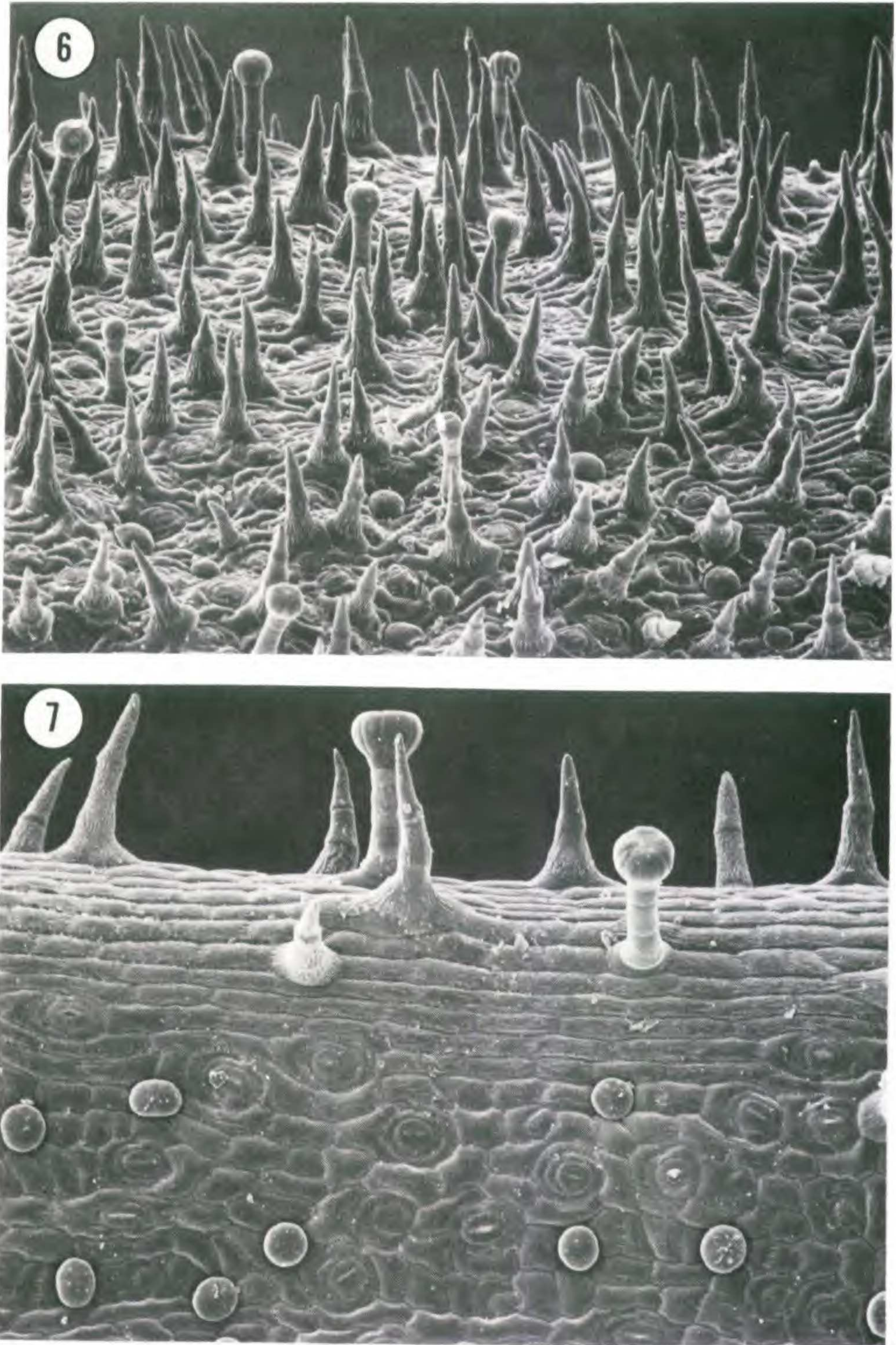


its flower size and leaf shape fall at the extremes of the range of variation of these characters in *P. purpurea*. In parts of Georgia and northern Florida *P. purpurea* has flowers as small as those of *P. godfreyi* (11–23 mm) but usually has less elongate leaves. In far southern Florida (Lee and Collier Counties) some individuals of *P. purpurea* have the nearly linear leaves of *P. godfreyi* but have much larger flowers. Thus although *P. purpurea* is exceptionally variable in both flower size and leaf shape, the combination of small flowers and linear or nearly linear leaves that characterizes *P. godfreyi* is infrequent in *P. purpurea*.

The warty nutlet surface, although unique to *Physostegia godfreyi*, is not an entirely reliable character and the degree of its expression is somewhat variable. There are a few specimens from Bay County that have smooth or only very faintly warty nutlets. Of the specimens with conspicuously warty nutlets, some have the wartlike projections over the whole surface (Figures 1 & 2), while others are warty only near the apex of the nutlet (Figures 3 & 4). It is worth noting that although *P. godfreyi* and *P. purpurea* may come into contact at one point along the Ochlockonee River (see below), the section of the range of *P. godfreyi* where plants with smooth nutlets occur is relatively far from the possible point of contact with *P. purpurea*. Thus it is unlikely that smooth nutlets have arisen in *P. godfreyi* through recent hybridization and introgression. All specimens of *P. godfreyi*, including those with smooth nutlets, have stalked glands on the calyx and rachis of the inflorescence, and all have the distinctive combination of small flowers and linear to nearly linear leaves.

One collection, *F. H. Sargent 11004* from just east of the Ochlockonee River in Wakulla County, is problematical. I have seen two specimens of this collection. One of them (WIS) has the warty nutlets and glandular calyx of *P. godfreyi*, while the second one (GH) has the smooth nutlets and eglandular calyx of *P. purpurea*. The shape of the leaves and length of the flowers are similar on the two specimens and are within the range of overlap of

Figures 1–5. Nutlets of *Physostegia godfreyi* and *P. purpurea*, showing difference in size and surface sculpturing (S.E.M. photographs). White bar in Figure 5 = 1 mm (all photos at same magnification). Figures 1 & 2. *P. godfreyi*. *R. K. Godfrey, et al.* 53473 (GH). Figures 3 & 4. *P. godfreyi*. *R. K. Godfrey* 57086 (Isotype; USF). Figure 5. *P. purpurea*. *D. W. Buden* 45 (WIS).



Figures 6 & 7. Stalked glands of *Physostegia godfreyi*. The parts photographed (S.E.M.) were taken from a greenhouse plant grown from rhizomes of *P. Cantino 1054* (GH). The noncapitate trichomes and sessile glands visible here are found throughout *Physostegia*. 6. Surface of calyx (100 \times). 7. Rachis of raceme (160 \times).

the two species in these characters. There is no evidence that either specimen is a hybrid. It is possible that this is a mixed collection that includes specimens from several localities accidentally combined under one collection number. In this regard it is worth noting that there is, in the herbarium of the University of Wisconsin, an unnumbered Sargent specimen of *P. godfreyi* that was collected in Liberty County on the same date as were the Wakulla County specimens. Since it is similar in general aspect to the two specimens of *Sargent 11004*, it is quite possible that Sargent inadvertently mixed one specimen from the Liberty County site with his collection from Wakulla County. As is evident from the distribution map of the two species (Figure 8), the site of Sargent's Wakulla County collection is much closer to other localities where *P. purpurea* has been collected than to any collection sites of *P. godfreyi*.

It is, on the other hand, quite possible that the species are indeed growing together at the collection site of *Sargent 11004*. I searched the site during July of 1977 but failed to find any *Physostegia*. However some of the roadsides in the area had been mowed shortly before my visit. While mowing does not kill the plants, it does make them exceedingly difficult to spot; thus further study of the site would be worthwhile. I have examined about 30 other specimens of *P. purpurea* from Wakulla County and none of them has either the glandular calyx or the warty nutlets of *P. godfreyi*. Similarly none of the specimens of *P. godfreyi* from the part of its range near populations of *P. purpurea* has the eglandular calyx or smooth nutlets of the latter species. Thus if hybridization is occurring in a local zone of contact, it appears not to be resulting in introgression.

With the exception of the basal rosette, the following description and key are based entirely on dried herbarium specimens. Because of their somewhat fleshy nature, the leaves shrink considerably in drying, and it is in the width measurements that this change is most noticeable. Since leaf width and the ratio of leaf length to width are among the distinctive characters of *Physostegia godfreyi*, it should be borne in mind that live plants will have wider leaves and a lower ratio of leaf length to width than is stated in the description. The flowers also average several millimeters longer on live plants.

Herbarium specimens rarely include the basal leaves because they normally fall off before anthesis. The description of the basal leaves is based on one dried specimen (*R. K. Godfrey et al. 53473*) and

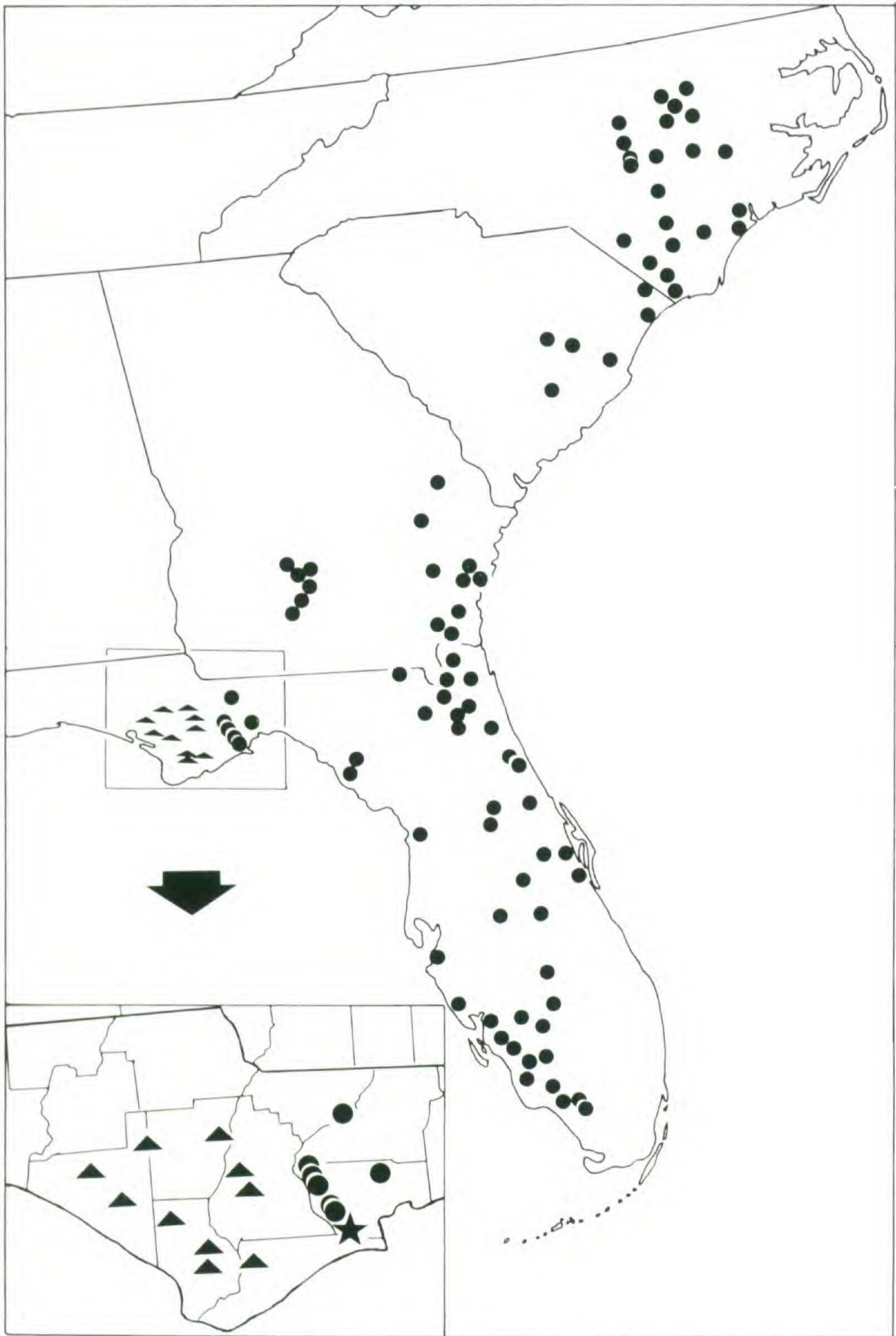


Figure 8. Distribution of *Physostegia purpurea* (circles) and *P. godfreyi* (triangles). The star marks the location of a possible sympatric occurrence of the two species (*F. H. Sargent 11004*).

several live plants grown from rhizomes collected near the type locality.

KEY TO DISTINGUISH *P. godfreyi* AND *P. purpurea*

Calyx and rachis of inflorescence puberulent and bearing minute stalked glands; nutlets 1.7–2.0 mm long, usually warty over part or all of surface; flowers (on dried specimens) 11–23 mm long; mostly west of Ochlockonee River in Florida Panhandle.

..... *P. godfreyi* Cantino

Calyx and rachis of inflorescence puberulent but lacking stalked glands; nutlets 2.0–3.1(–3.6) mm long, smooth; flowers (on dried specimens) 15–34 mm long; North Carolina to Florida, not occurring west of Ochlockonee River in Florida.

..... *P. purpurea* (Walt.) Blake

***Physostegia godfreyi* Cantino, sp. nov.**

Herba perennis erecta ad 110 cm alta, plerumque infra inflorescentiam non ramosa. Rhizoma 1–10 cm longum, plerumque non ramosum. Folia rosulae basalis plerumque ante anthesin decidua. Folia caulina inferna et media glabra, firma, aliquanto succulenta; lamina linearis vel peranguste elliptica, peranguste oblonga, oblanceolata, vel raro lanceolata, saepe aliquanto falcata, (1.2–)1.5–6.5(–7.5) cm longa, (1.5–)2–6(–9) mm lata, marginibus integris, repandis, vel sparse dentatis, dentibus obtusis vel acutis. Folia caulina inferna plerumque in petiolum decrescentia; folia caulina media sessilia. Folia caulina superna sessilia, magnopere diminuta, plerumque bracteas simulantia. Racemi 1–3(–5), erecti, 5–23 cm longi, apicem versus puberuli, basi subglabri, glandes stipitatas ubique sparsim ferentes. Flores 11–23 mm longi, rare positi, calycibus post anthesin plerumque non imbricatis; pedicellus 0.5–2.0 mm longus, dense puberulus, plerumque glandes stipitatas aliquot ferens. Calyx sub anthesi tubulari-campanulatus, puberulus, glandes stipitatas ferens, tubo 3.0–5.5 mm longo, dentibus triangularibus, 0.6–1.8 mm longis. Corolla pallide rosea, extus villosa vel glabra, tubo calyce 2–3plo longiore, labio superno integro, 3 lobis labii inferni integris vel emarginatis. Nucula 1.7–2.0 mm longa, trigona, lateribus convexis, plerumque undique el saltem apicem versus verrucosa.

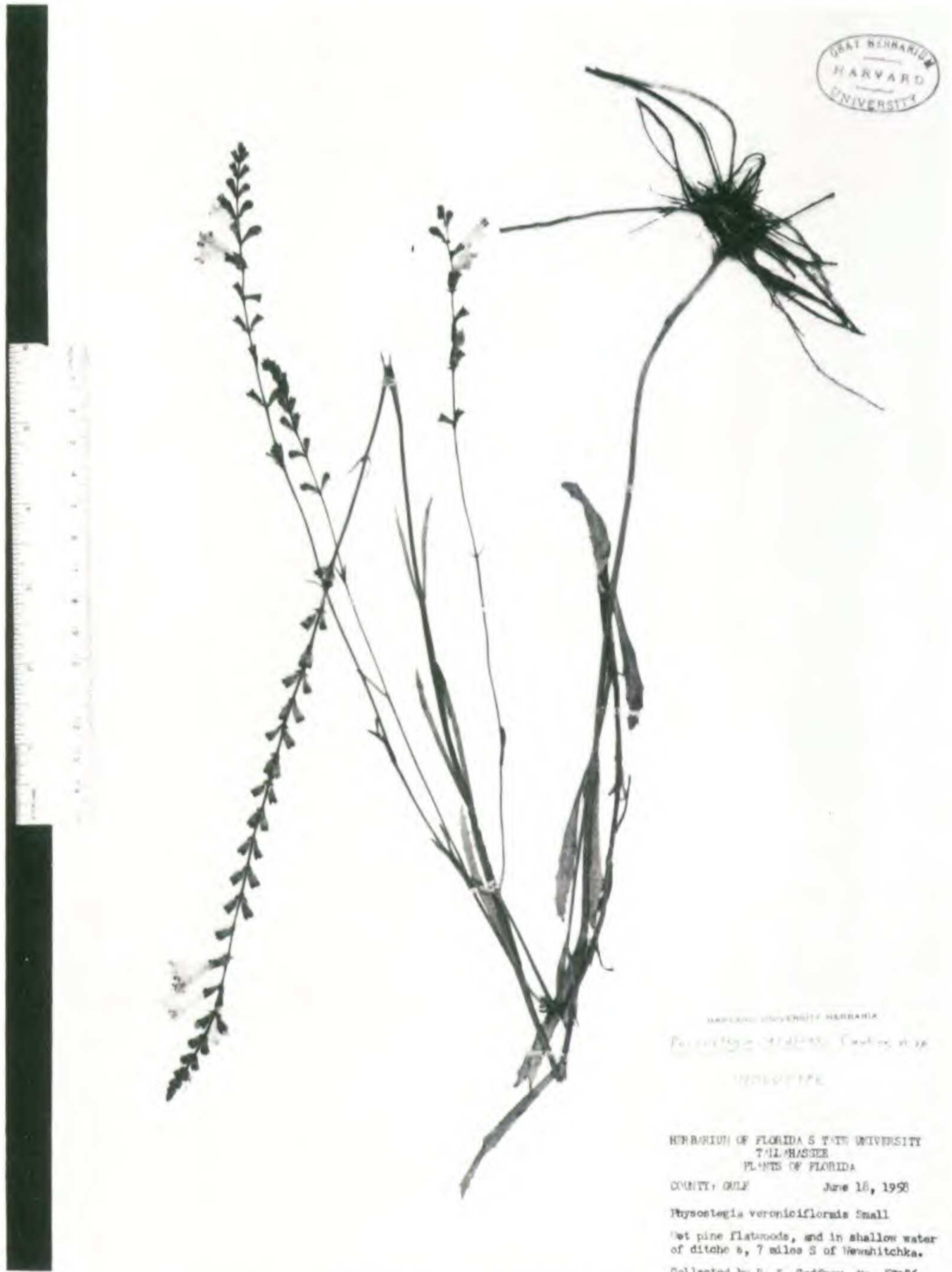


Figure 9. Holotype of *Physostegia godfreyi* Cantino.

TYPE COLLECTION. Florida. Gulf County: wet pine flatwoods, and in shallow water of ditches, 7 miles south of Wewahitchka, 18 June 1958, *R. K. Godfrey* 57086. HOLOTYPE: GH (Figure 9); ISOTYPES IA, USF, FSU.

ADDITIONAL SPECIMENS EXAMINED. Florida.

Bay County: 5 miles north of Youngstown, *R. Kral* 15648 (VDB); Between West Bay and Vicksburg, *R. K. Godfrey & J. N. Triplett, Jr.* 59818 (LL); Lynn Haven, *C. Billington* 12 (US). **Calhoun County:** 5 miles west of Blountstown, *R. Kral* 2467 (VDB); 4 miles west of Blountstown, *R. K. Godfrey et al.* 53473 (GH). **Franklin County:** 6 miles south of Sumatra, *R. Kral & R. K. Godfrey* 15058 (VDB). **Gulf County:** south of Wewahitchka, May 1928, *J. K. Small* s.n. (USF, NY, NCU); Wewahitchka, *D. Demaree* 50379 (NCU); 10 miles north of Port St. Joe, *M. Meagher* 389 (USF); 12 miles west of Wewahitchka, 29 May 1972, *R. K. Godfrey* 71370 (NCU); 7.4 miles south of Wewahitchka, *P. Cantino* 1053 (GH); 15 miles northeast of Port St. Joe, 14 June 1955, *E. S. Ford & E. West* s.n. (GH). **Liberty County:** 11.5 miles north of Sumatra, *R. K. Godfrey & J. N. Triplett, Jr.* 59747 (LL, NCU); 10 miles south of Bristol, 23 June 1950, *F. H. Sargent* s.n. (WIS). **Wakulla County:** 4 miles west of Sopchoppy, *F. H. Sargent* 11004 (WIS).

ACKNOWLEDGMENTS

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